

Clinical Evidence Series

Testing physiologic monitor alarm customization software to reduce alarm rates and improve nurses' experience of alarms in a medical intensive care unit



What's different

Rather than automatically changing alarm settings, Alarm Advisor provides real-time, visual decision support to help nurses recognize repeated or sustained alarm patterns and prompt patient-specific alarm customization within existing clinical workflows.



Interpretation

Alarm customization support software is associated with a modest but statistically significant reduction in selected medium-priority alarms and improvements in nurses' perceived alarm burden.



Key takeaways

Alarm Advisor implementation was associated with significant **reductions** in **heart rate** (-9.3%), **respiratory rate** (-11.8%), and **arterial pressure** (-15.9%) **alarm rates**.



Objectives

Evaluate the impact of Alarm Advisor on alarm rates and nurses' alarm experience and acceptance.



Study design and methods

- Prospective pre/post study in a 56-bed medical ICU
- Alarm data and nurse surveys collected for 2 months pre- and post-implementation of Alarm Advisor
- Nurses received in-unit education on Alarm Advisor use



Results



Alarm outcomes

- Heart rate (HR), respiratory rate (RR), and arterial blood pressure (ABP) **alarm rates decreased** by 9.3%, 11.8%, and 15.9%, respectively ($p < 0.001$)
- **Alarm durations** for HR, RR, and ABP were **reduced** by 7.8%, 13.3%, and 9.3%, respectively ($p < 0.05$)
- SpO₂ alarm rate and duration did not change



Nurse-reported experience

- Fewer nurses reported spending $\geq 20\%$ of their time responding to non-actionable alarms ($p = 0.026$)
- Fewer nurses reported that alarms disturbed their workflow (45.5% vs. 66.7%, $p = 0.027$)
- Fewer nurses reported missing urgent alarms (25.0% vs. 43.9%, $p = 0.043$)